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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/752,254	12/30/2000	Wolfgang Roesner	AUS920000228US1	7483

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EXAMINER	
GARCIA OTERO, EDUARDO	
ART UNIT	**PAPER NUMBER**
2123	7

DATE MAILED: 05/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/752,254	ROESNER ET AL.	
	Examiner	Art Unit	
	Eduardo Garcia-Otero	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 December 2000 and 3/12/01*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 March 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION: Non-Final (first action on the merits)

Introduction

1. Title is: HIERARCHICAL PROCESSING OF SIMULATION MODEL EVENTS.

2. First named inventor is: ROESNER.

3. Claims 1-9 have been submitted, examined, and rejected. Claims 1 and 6 are independent.

4. US application filing date is 12/30/2000, no earlier priority is claimed.

Index of Prior Art

5. **Smith** refers to "HDL Chip Design" by Douglas J. Smith, 1996, ISBN 0-9651934-3-8, Chapter 5 "Structuring a Design" pages 113-130.

6. **MS Dictionary** refers to Microsoft Computer Dictionary, Fourth Edition, by Microsoft Press, JoAnne Woodcock as Senior Contributor, ISBN 0-7356-0615-3, May 1999, pages 96-97.

Definitions

7. IEEE Dictionary refers to The Authoritative Dictionary of IEEE Standards and Terms, Seventh Edition, by IEEE Press, ISBN 0-7381-2601-2, 2000:

- **"comment (software)"** is defined as "Information embedded within a computer program, job control statements, or a set of data, that provides clarification to human readers, but does not affect machine interpretation."
- **"comment source statements"** is defined as "Source statements that provide information to people reading the software source code and are ignored by the compiler".

8. Computer Desktop refers to The Computer Desktop Encyclopedia, by Alan Freedman, AMACOM, 1996, ISBN 0-8144-012-4:

- **"comment"** is defined as "A descriptive statement in a source language program that is used for documentation."

9. MS Dictionary refers to Microsoft Computer Dictionary, Fourth Edition, by Microsoft Press, JoAnne Woodcock as Senior Contributor, ISBN 0-7356-0615-3, May 1999:

- **"comment"** is defined as "Text embedded in a program for documentation purposes. Comments usually describe what the program does, who wrote it, why it was

changed, and so on. Most programming languages have a syntax for creating comments so that they can be recognized and ignored by the compiler or assembler. Also called remark. See also comment out."

Specification-objections-informalities

10. The Specification is objected to because of the following informalities. Appropriate correction is required.

11. At specification page 1, Applicant references several U.S. Patent Applications by using attorney Docket Numbers. Please revise to state the U.S. Patent Application number, or the issued patent number if applicable. See MPEP 608.01(p)(I)(A)(1).

Double Patenting

12. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

13. A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

14. Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

15. **Claims 1-9 are rejected** under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-23 of U.S. Patent No. 6,195,627. Although the conflicting claims are not identical, they are not patentably distinct from each other because the term "describing an instrumentation entity... associating... non-conventional comment" in claim1 of Patent 6,195,627 discloses the terms "instrumentation declaration comment" and "input port mapping comment" in claim 1 of the present application. Note that the specification

of Patent 6,195,627 includes FIGs 1 through 6B, which appear identical to the FIGs of the present application. Especially note FIG 4C of Patent 6,195,627 which is an example of using "instrumentation declaration comment" and "input port mapping comment" (terms from claim 1 of the present application) in order to "describing an instrumentation entity... associating... non-conventional comment" per claim1 of Patent 6,195,627.

16. Thus, when the claims of Patent 6,195,627 are interpreted in view of the specification (especially FIG 4C), they are not patentably distinct from the claims of the present application.

35 USC § 112-Second Paragraph-indefinite claims

17. The following is a quotation of the second paragraph of 35 U.S.C. 112: The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

18. **Claims 1, 2, 6, 8, and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite** for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

19. In claim 1 and 6, the term **"cross-hierarchical instrumentation entity"** is not adequately defined. Emphasis added. Note that the definition at specification page 5 states "is defined within the first level of simulation hierarchy utilizing an instrumentation declaration comment containing data representing a cross-hierarchical instrumentation entity...." Said definition is not clear, and said definition appears circular (using the term itself as part of the definition).

20. In claim 2, the term **"hierarchical list of design entities"** is indefinite. Specifically, it is not clear how said list of design entities is made "hierarchical".

21. In claim 8, the term "connecting step... **identifying a list of design entities**" is indefinite. Specifically, it is not clear how said list is identified during said connecting step.

22. In claim 9, the term "connecting step further... **identifying an instrumentation entity"** is indefinite. Specifically it is not clear how said instrumentation entity is identified during said connecting step.

Claim Interpretation

23. **The claim language is interpreted in light of the specification.** Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns,* 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

24. In claim 1, the term **"instrumentation entity"** is interpreted as equivalent to the Smith term "design entity", see Smith page 115.

25. Note that specification page 28 states "instrumentation entities... in contrast to... design entities". The specification further discusses many possible limitations, but the specification fails to clearly define "instrumentation entities" as unambiguously different than "design entities". Rather, it appears that "instrumentation entities" might be a subset of "design entities".

26. First, the specification page 28-29 states "in what follows, it will be assumed that an instrumentation entity is described by a single HDL file". However, the specification does not appear to intend said limitation (a single HDL file) to be read into the claims.

27. Second, similarly, specification page 29 states "FIG. 4A, there is illustrated a block diagram representation of an instrumentation entity". Again, the specification does not appear to intend any limitations from said FIG 4A to be read into the claims.

28. Third, additionally, specification page 29 states "A preferred embodiment... three distinct types of events... count... fail... harvest". Yet again, the specification does not appear to intend said limitations to be read into the claims.

29. Thus, the clam 1 term "instrumentation entity" appears equivalent to the Smith term "design entity". If the Applicant intends further limitations in the claims, then said further limitations should be explicitly stated. Said claim interpretation is maintained throughout the claims.

30. **It appears that the Applicant's intent may be for the term "instrumentation entity" to be some specific subset of all possible "design entities",** see the bottom of specification page 28. However, it is not clear which (if any) of the additional limitations discussed at specification page 28-29 are intended to be included as limitations of the claims.

Claim Rejections - 35 USC § 102(b)

31. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action: A person shall be entitled to a

patent unless – (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

32. Claim 6-9 are rejected under 35 U.S.C. 102(b) as being anticipated.

33. Claim 6 is rejected under 35 U.S.C. 102(b) as being anticipated by Smith.

34. Claim 6 is an independent claim with 2 limitations.

35. [1]-**"defining a cross-hierarchical instrumentation entity within said first level of simulation hierarchy"** is disclosed by Smith page 115 Table 5.1 "Constructs used to build structure into HDL models", and page 117 "this example has three levels of hierarchy", and page 117 FIG 5.1 "Course grain hierarchical structure", and page 118 "Three hierarchical levels", and page 119 "link signals between the two levels of hierarchy".

36. [2]-**"connecting a first input of said instrumentation entity to said first simulation event and connecting a second input of said instrumentation entity to said second simulation event"** is disclosed by Smith page 115 Table 5.1 "Constructs used to build structure into HDL models", and page 117 "this example has three levels of hierarchy", and page 117 FIG 5.1 "Course grain hierarchical structure", and page 118 "Three hierarchical levels", and page 119 "link signals between the two levels of hierarchy".

37. Claims 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith.

38. Claims 7-9 depend directly or indirectly from independent claim 6.

39. In claim 7, **"generating a cross-hierarchical simulation event within said cross-hierarchical instrumentation entity utilizing said first simulation event and said second simulation event"** is disclosed by Smith page 115 Table 5.1 "Constructs used to build structure into HDL models", and page 117 "this example has three levels of hierarchy", and page 117 FIG 5.1 "Course grain hierarchical structure", and page 118 "Three hierarchical levels", and page 119 "link signals between the two levels of hierarchy".

40. In claim 8, **"said connecting step further comprises identifying a list of design entities in which said simulation event occurs"** is disclosed by Smith page 115 Table 5.1 "Constructs used to build structure into HDL models", and page 117 "this example has three levels of hierarchy", and page 117 FIG 5.1 "Course grain hierarchical structure", and page 118 "Three hierarchical levels", and page 119 "link signals between the two levels of hierarchy".

41. In claim 9, **"said connecting step further comprises identifying an instrumentation entity instantiated within said second level of simulation model hierarchy that generates said second simulation event"** is disclosed by Smith page 115 Table 5.1 "Constructs used to build structure into HDL models", and page 117 "this example has three levels of hierarchy", and page 117 FIG 5.1 "Course grain hierarchical structure", and page 118 "Three hierarchical levels", and page 119 "link signals between the two levels of hierarchy".

Claim Rejections - 35 USC § 103

42. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action: (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

43. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows: Determining the scope and contents of the prior art. Ascertaining the differences between the prior art and the claims at issue. Resolving the level of ordinary skill in the pertinent art. Considering objective evidence present in the application indicating obviousness or nonobviousness.

44. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable.

45. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over MS Dictionary in view of Smith.

46. Independent claim 1 is a "computer-readable medium" claim with 3 limitations, numbered by the Examiner for clarity.

47. [1]-**"comment"** is disclosed by MS Dictionary pages 96-97 "comment... Text embedded in a program for documentation purposes. Comments usually describe what the program does, who wrote it, why it was changed, and so on. Most programming languages have a syntax for creating comments so that they can be recognized and ignored by the compiler or assembler. Also called remark. See also comment out."

48. MS Dictionary does not explicitly disclose the additional limitations.

49. [2]-**"an instrumentation declaration comment containing data representing a cross-hierarchical instrumentation entity"** is disclosed by Smith page 115 Table 5.1 "Constructs

used to build structure into HDL models", and page 117 "this example has three levels of hierarchy", and page 117 FIG 5.1 "Course grain hierarchical structure", and page 118 "Three hierarchical levels", and page 119 "link signals between the two levels of hierarchy".

50. [3]-**"an input port mapping comment containing data representing a simulation event that is input into said cross-hierarchical instrumentation entity to generate a cross-hierarchical simulation event"** is disclosed by Smith page 118 "Three hierarchical levels... port... in... out", and page 119 "link signals between the two levels of hierarchy".

51. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use Smith to modify MS Dictionary. One of ordinary skill in the art would have been motivated to provide detailed comments embedded in the program describing the hierarchical entities "for documentation purposes... describe what the program does" per MS Dictionary pages 96-97.

52. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over MS Dictionary in view of Smith.

53. Claims 2-5 depend directly or indirectly from independent claim 1.

54. In claim 2:

55. [1]-**"an instance identifier field containing data representing a hierarchical list of design entities in which said simulation event occurs"** is disclosed by Smith page 118-119 "Three hierarchical levels...".

56. [2]-**"an event identifier field containing data representing an instrumentation entity that generates said simulation event"** is disclosed by Smith page 118-119 "Three hierarchical levels...".

57. In claim 3:

58. [1]-**"data representing a highest level design entity in which said cross-hierarchical instrumentation entity is instantiated"** is disclosed by Smith page 118-119 "Three hierarchical levels...".

59. [2]-**"data representing a lowest level design entity in which said simulation event occurs"** is disclosed by Smith page 118-119 "Three hierarchical levels...".

60. [3]-**"data representing intermediate design entities between said highest level design entity and said lowest level design entity"** is disclosed by Smith page 118-119 "Three hierarchical levels...".

61. In claim 4, **"said instance identifier field further includes data representing a list of design entities in descending hierarchical order"** is disclosed by Smith page 118-119 "Three hierarchical levels...".

62. In claim 5:

63. [1]-**"a first event identifier sub-field containing data representing an instance of said instrumentation entity"** is disclosed by Smith page 118-119 "Three hierarchical levels...".

64. [2]-**"a second event identifier sub-field containing data representing an event type"** is disclosed by Smith page 118-119 "Three hierarchical levels...".

65. [3]-**"a second event identifier sub-field containing data representing an instance of said event"** is disclosed by Smith page 118-119 "Three hierarchical levels...".

66. MOTIVATION FOR CLAIMS 2-5. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use Smith to modify MS Dictionary. One of ordinary skill in the art would have been motivated to provide detailed comments embedded in the program describing the hierarchical entities and the relationships among said hierarchical entities "for documentation purposes... describe what the program does" per MS Dictionary pages 96-97.

Additional Cited Prior Art

67. The following US patents or publications are hereby cited as prior art, but have not been used for rejection. Applicant should review these carefully before responding to this office action.

68. US Patent 6,470,482 by Rostoker et al., discloses using VHDL to design integrated circuits using "hierarchical" arrangements at column 2 lines 37-52:

69. VHDL supports three distinct styles for the description of hardware architectures. The first of these is "structural" description, wherein the architecture is expressed as a hierarchical arrangement of interconnected components. The second style is "data-flow" description, in which the

architecture is broken down into a set of concurrent register assignments, each of which may be under the control of gating signals. This description subsumes the style of description embodied in register transfer level (RTL) descriptions. The third style is "behavioral" description, wherein the design is described in sequential program statements similar to a high-level programming language. In the main hereinafter, the behavioral description style is discussed. However, all three styles may be intermixed in a single architecture.

Conclusion

70. All claims stand rejected.

Communication

71. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eduardo Garcia-Otero whose telephone number is 703-305-0857. The examiner can normally be reached on Tuesday through Friday from 9:00 AM to 8:00 PM. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kevin Teska, can be reached at (703) 305-9704. The fax phone number for this group is 703-872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist, whose telephone number is (703) 305-3900.

* * * *

KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER